

What is claimed is:

1. A molded glass objective lens comprising: a first surface having a center symmetric convex surface shape at least in a range of an optical beam passing therethrough; a second surface having a center symmetric effective surface shape at least in a range of an optical beam passing therethrough on a side opposite to said first surface; and a center symmetric cylindrical side surface crossing with said first surface, characterized in that a center curvature radius r_A of said first surface satisfies the following formula:

$$\sqrt[3]{\frac{3}{4\pi}V_1} \leq r_A < \sqrt[3]{\frac{3}{4\pi}V_2}$$

wherein V_1 denotes the volume of said molded glass objective lens, and V_2 denotes the volume of a virtual lens portion surrounded by a cylindrical surface including said first and second surfaces and said cylindrical side surface.

2. An objective lens according to claim 1, further comprising a circular reference plane surface which does not shield a transmitting luminous flux refracted at said first surface and is perpendicular to an optical axis, within a border surface which would exist assuming that said virtual lens portion is overlapped with said molded glass objective lens so as to correspond to said first and second surfaces and said cylindrical side surface.

3. An objective lens according to claim 2, further

comprising such a shape that the curvature radius is minimum outside an effective diameter of said second surface.

4. An objective lens according to claim 1, further comprises a circular reference cone surface centering an optical axis which does not shield a transmitting luminous flux refracted at said first surface, within a border surface which would exist assuming that said virtual lens portion is overlapped with said molded glass objective lens so as to correspond to said first and second surfaces and said cylindrical side surface.

5. An optical pickup device characterized by comprising a molded glass objective lens including: a first surface having a center symmetric convex surface shape at least in a range of an optical beam passing therethrough; a second surface having a center symmetric effective surface shape at least in a range of an optical beam passing therethrough on a side opposite to said first surface; and a center symmetric cylindrical side surface crossing with said first surface, characterized in that a center curvature radius rA of said first surface satisfies the following formula:

$$\sqrt[3]{\frac{3}{4\pi}V1} \leq rA < \sqrt[3]{\frac{3}{4\pi}V2}$$

wherein V1 denotes the volume of said molded glass objective lens, and V2 denotes the volume of a virtual lens portion surrounded by a cylindrical surface including said first and second surfaces and said cylindrical side surface.

6. An optical recording/reproducing apparatus characterized by comprising an optical pickup device having a molded glass objective lens including: a first surface having a center symmetric convex surface shape at least in a range of an optical beam passing therethrough; a second surface having a center symmetric effective surface shape at least in a range of an optical beam passing therethrough on a side opposite to said first surface; and a center symmetric cylindrical side surface crossing with said first surface, characterized in that a center curvature radius r_A of said first surface satisfies the following formula:

$$\sqrt[3]{\frac{3}{4\pi}V1} \leq r_A < \sqrt[3]{\frac{3}{4\pi}V2}$$

wherein $V1$ denotes the volume of said molded glass objective lens, and $V2$ denotes the volume of a virtual lens portion surrounded by a cylindrical surface including said first and second surfaces and said cylindrical side surface.